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THE RHODE ISLAND MEDICAL JOURNAL

Volume XXIV JUNE, 1941 Number 6

# A GENERATION OF SURGERY

LUCIUS C. KINGMAN, M.D.
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In this time of world upheaval when we all cannot help but be depressed and discouraged that such things can happen between peoples we thought were civilized, it is well for us to take stock of our profession. For, by so doing, we may be able to keep our heads level and our souls more serene. Let us not dwell on our shortcomings, our failures, that we have left undone those things we should have done. These things are with us always and we need no reminder. Rather let us review our experience and impressions of the past generation in surgery. For, thereby, we may well obtain comfort in the belief that the efforts of the profession have been worth while.

As a House Officer over thirty-five years ago I dreaded to see a gall-bladder case come to operation because I knew we were in for trouble, for there would be a hard post-operative course and the mortality was high. I finished my hospital training with rather a confused idea as to when a gall-bladder was operable. In contrast, with the few exceptions they are now all operable. Wherein lies the difference between a gall-bladder operation of 1905 and 1941? Trying to formulate this has led to a review of the practice of surgery based on my personal impressions and experiences of the past thirty-seven years. A review should be of value in showing not only what have been the trends forward but as a check to make sure that valuable methods and knowledge have not been lost in the press of the new. Displacement of the old by the new is not always an advance especially if the latter is not thoroughly proven.

The foundations of Surgery—anatomy, physiology, pathology and bacteriology—were well systematized at the beginning of this era. Knowledge has been added, the biggest change being in physiology. Anatomy I think was better known by the surgeon then than now. The rational of many surgical procedures empirically applied and found useful has been established after the fact, due to the advancement in physiology and pathology. Examples of this are in physiology, the pre- and post-operative use of laxatives; in pathology, the better understanding of new growths. There has been a gradual increase in the scientific point of view, going from the general to the particular instead of the reverse, more proper evaluation of statistics, observations to find the truth not to prove a theory or assumption.

In the art of practice, the handling of patients, we have seen a change I think for the better. Medical knowledge has increased amongst the laity, perhaps accounted for by a general increase in education, more reliable publications on medical subjects for the layman who formerly had only the book on Family Medicine, more medical lectures and now radio talks. These have been fostered by the profession with mutual advantage. However, some of it has been forced on the profession by the layman and this has brought about the realization by the profession that it must lead in such matters. The profession is no longer on a pedestal. Our infallibility and inscrutable dignity have been debunked. We no longer wear the high hat and frock coat. The public receives the explanations which it expects and should get. Personal ties between the doctor and patient have been loosened particularly in the specialties. The surgeon is called in for the particular job and is not the family doctor. The larger the community the more impersonal the relationship. In surgery this is not entirely a loss, for fairer judgment is obtained when unswayed by personal feeling.

Better co-operation exists between doctors, between different departments in surgery and between the medical man and the surgeon. Of course, each surgeon thinks that if he would spend a few hours brushing up on medicine he could do a better

Address of the President, delivered at the one hundred and thirtieth Annual Meeting of the Rhode Island Medical Society, at Newport, May 28-29, 1941.

job than the medical man and the medical man knows that all that prevents his being a brilliant surgeon is lack of time to develop his operative technic. However, we are all more willing to grant the other fellow his rights. Perhaps this has come about through the realization of the advance of medical knowledge and the inability of any one man to acquire anything but a fraction of it.

This realization has led to the splitting of surgery into more different branches than previously existed. Thirty-five years ago there were the specialties of eye, ear, nose and throat, gynecology, and these were somewhat overlapped by general surgery. Orthopedics was just beginning to separate. The general surgeon was fumbling with urology and trying to use the cystoscope. When this use was mastered we had a new specialty. Neurological surgery was not split off and fractures were all done or done up by the general surgeon. Radiology chiefly required a technician to run the Crookes tube. Besides the development of these special and seemingly permanent lines, there have been temporary split-offs as with thyroid surgery, which have returned to the field of general surgery. These temporary split-offs have been of advantage for the rapid development of a special field which, when developed, could properly be returned to the general field. At present, the latest is the development of chest surgery. It is too recent to know whether this will be a permanent budding off. Industrial surgery closely tied in with industrial medicine and hygiene is now a definite specialty. The dangers seen in these split-offs are those inherent in any specialization—too narrow a viewpoint, loss of sight of the patient as a whole. In surgical specialization there is the added danger of insufficient general grounding, as seen for example in that urologist who, from the time of leaving medical school, has received training only in urology. As an example of the value of division, the separation of fracture cases from general surgery has been a natural development. The chief contributing factors to this separation have been a realization by the surgeon that on a busy hospital service the fractures could not and did not receive the required attention, that the surgeon was not trained or equipped for proper after-care, that the surgery of the soft parts is quite different from that of the hard parts. Advances in the treatment of fractures are pronounced and are a direct result of specialization. It has proven itself from the start.

A striking change has been that in hospital facilities especially for private patients. Up to twenty-five years ago at least half our operations were performed in the home. At the Massachusetts General Hospital there were no private patients. Here in Providence at the Rhode Island Hospital we had Ward F and a few side rooms. There was the Parade Street Hospital and other makeshifts. Now the day of the medical boarding house is past. The private hospital has nearly disappeared. A hospital can furnish proper facilities even for private patients only if endowed or tax supported, quite analogous to education. Not only is there the development of the large hospitals but also the establishment of the smaller community hospital. And on the whole a better grade of surgery is being done in these small hospitals than was done in the large centres thirty-five years ago.

The rise of clinics has occurred in this time. The Mayos were just becoming known at the beginning of the era. The full-time medical man in the hospital and school was unheard of in America. The special hospital clinic such as the Tumor Clinic, composed of men of different departments, is a natural, though recent, development due to the realization of the need of combining the knowledge of many special branches.

As to surgical education:—The poor medical school has nearly disappeared—to be replaced by the osteopath. There is a closer tie-in between the school and hospital with an earlier and more complete contact between student and patient. Didactic lectures are out of the curriculum. We had them in my school days and I should not like to have missed some of them. We still have lectures in the Medical Society in the form of "papers". The medical student is treated more as a post-graduate student. Hospital service is now practically a pre-requisite for practice. Residencies in surgery formerly were established only at Johns Hopkins, now they are in more and more hospitals. Realization by the hospital interne of this need for further training is encouraging and significant and the number of residencies should be increased. Many post-graduate schools, courses and fellowships have been established not only as refresher courses but for adequate instruction along special lines as preparation for practice and for research. There has been a falling-off in the opportunities for private assistants which is a loss both to the potential assistant and to the surgeon. It leads to a lack of good team

work. The occasional assistant or rotating interne can only be of the second class—one who does as told. A first class assistant is doing the operation mentally one step ahead of the surgeon.

To come to some of the more detailed changes and advances.

First; as to diagnosis and diagnostic methods. We make better diagnoses in most instances but there is a question whether we are as good diagnosticians. Has our power of diagnosis kept pace with the advancement of medical knowledge? The advance in diagnostic aids—mechanical and laboratory methods—often blunts our powers of observation and deduction. As an example—fracture cases. There we often find ourselves not looking for deformity, abnormal mobility, crepitus but waiting for the X-ray. And the latter has been known to be incorrectly negative. Blind acceptance of laboratory results without cerebration is more to be guarded against than formerly because there are more such aids which may confuse us, especially the negative results of such examinations. An autopsy may not show why a patient died. Any laboratory method is still dependent on the eye and the brain back of it.

Of the diagnostic aids developed in this generation, X-ray ranks first. We had it at the beginning for long bone fractures and foreign bodies. I cannot remember a skull plate, a chest plate nor a plate of bone disease in my hospital days. Now we have the X-ray diagnostic work on the G. I. tract, G. U. tract, biliary tract, chest, the spine and skull inside and out, the osseous system. We couldn't do modern surgery without it even going back to the method of frequent exploratory operations. Here the gall bladder operation comes in again as an example. Relief, though as a left-over from early experience, is still felt when the exploring finger feels the gall stones, even though the stones have been visualized on the X-ray plate previous to operation. We could not formerly spot the kinked ureter, the growth in the lung and so on. All honor to the Martyrs who developed this branch of medicine.

The improvement in electric lighted instruments has been a grand addition. Formerly the head mirror was the chief source of light. The self-illuminated cystoscope was just beginning. Now add the esophagoscope, gastroscope, bronchoscope, pleuroscope, peritoneoscope.

Discussion was just beginning thirty-five years ago as to whether a blood pressure reading could be accurate without a cannula in the vein. When this was settled we took the reading by feeling the pulse, —no auscultation and no diastolic reading. There was no basal metabolism machine, no electrocardiograph, no spinal fluid pressure readings, no brain wave readings. It is interesting to note that the clinical thermometer had been in general use only about thirty years previous to the beginning of this era.

In the laboratory we made many wonderful diagnoses as to the state of the kidney by urinalysis but knew no measure of its function. We measured the urea in the urine and gained no useful knowledge thereby. We had red and white blood counts but no differential of the white cells except in leukemia. Stained specimens were for nucleated reds and malaria. Widal reaction was the only serology. We had no blood cultures from the living, no blood chemistry, no phthalein test. In pathology frozen section was in use. On the whole, surgical pathology was good and much was learned from the fresh specimen. We did not have the good differentiation of today, which is due to increase in knowledge; as for instance in lymphoblastoma and the other malignant new growths.

Some of the diseases that we had to combat have nearly disappeared—tuberculosis of glands, bones and peritoneum, the typhoid perforation, anthrax. Except for some rare infections we have added few new diseases but have seen the separation into clinical entities of pathological processes formerly grouped en masse or unrecognized. We have added new fields—nervous system, esophagus, stomach, chest and lung, blood vessels. We were taught to think in terms of pathology but not much in terms of physiology. We were getting away from thinking in terms of symptoms but such things as organic functional capacity, water balance, vitamins had not entered our consciousness.

We have as new adjuvants to surgery insulin, liver extract, vitamins, novocain, barbiturates, arsenicals and bismuth, chemo-therapy, radiation therapy, a better understanding of the action of many drugs. Intravenous therapy really began with the use of salvarsan during this era. We used to cut down on a vein and put in a cannula usually as part of the terminal rites in a moribund patient. Our saline was probably as fatal then as now when not well prepared. Subcutaneous salt solution was

used rather vaguely. Blood transfusion had been done and gotten away with by crude methods of only historic interest. In our era it has developed through the various stages from direct vessel to vessel methods, by various cannulae and sutures, to the present state of blood banks, plasma banks, dried plasma. There was no blood typing.

We purged our patients before and after operation lacking all sense both physiological and common. We took out drains and put them back unnecessarily and detrimentally. Our patients suffered post-operative torments from thirst and backache. They died of vomiting and dilated stomachs. At times some didn't get the needful morphia. Some patients were prayed with before operation—perhaps there was more need of it. Now we endeavor to assure our patients that an operation is to insure continuation in this world. We didn't get the needful water into them either before or after operation. Glucose was the terrible stuff put in cheap candies. And who had heard of blood proteins? We had no Levine tube.

In accident cases the most important change has been the fuller realization that these cases should not be treated as to wounds and fractures except to check hemorrhage and immobilize the fractures until the patient as a whole has been treated. We had a shock table in the accident room but often did too much too immediately. We have learned the difference between contaminated and infected wounds and the time limit involved. Debridement has been developed. We have better treatment of shock, we have gas bacillus antitoxin, we have chemo-therapy. We have less faith in antiseptics and more in soap and water. In the treatment of sepsis the most marked advance has been the differentiation between the action of streptococci and staphylococci and the use of radiation and chemotherapy. The foundation knowledge of proper drainage was nearly as well known then as now. Hypertonic solutions had been empirically used but not on a scientific basis until World War I. We had no vaccines. Antiseptics flourished along with the undismayed bacteria. Effect of the chemical disinfectants on the normal tissues was not realized.

What new operations do we do now aside from perhaps doing certain things better? We take out the stomach whole or in part. We take out the gall bladder and we anastomose it to the stomach or duodenum. We invade the pancreas. We remove the spleen for disease as well as injury. The intestinal tract is more or less removed. We invade the brain and the nervous systems. In the chest we take out lungs in whole or part, we collapse the lung; the heart is having various things done to it. We inject varicosities, the toxic thyroid receives due consideration before operation. Urology is on a rational basis.

A few things we don't do. We don't do thyroidectomies and hysterectomies to cure nervous and mental disorders. We don't dissect or strip out varicose veins. We rarely operate on gummata or gastric crises. And seldom take out the only functioning kidney. We don't operate on stomachs that the medical man can keep in order. We don't cure many more cases of appenditicis.

In anesthesia has the improvement been in anesthetic agents or in knowledge and skill of administration? I think the latter. The greatest advances I might venture to put as maintenance of oxygen level, pre-operative medication, novocaine and similar agents, local and spinal.

I doubt if we are as good craftsmen as our forefathers. Who of us can do a thigh amputation with the speed and finish of the old masters? The changes in technic have been chiefly towards simplification. In preparation of the hands a real scrub with soap and water without reliance on chemicals is the rule. Our nails are no longer black from bichloride. Preparation of the skin in field of operation is simpler and seems as efficacious. Use of caps and masks is new in this era. Gowns are better and the elbow sleeve is no longer seen. Cotton gloves are gone. Rubber gloves are better and of universal use. Thirty-five years ago the bare hand was still in use. Draping is better. Instruments have not changed much, but they are poorer in quality except for a few makes. New tools, of course, have been developed to meet new operative methods and locations—i.e. chest work and brain work. Electric cutting and coagulation are new, and we have the electric cautery in place of the Paquelin. We use more standard layouts of tools and needles, fewer special tools. The appendix crusher and tucker are out. The many weird retractors and specula have vanished and the great variety of needles. I have seen no new needle holder for a decade. There used to be one every six months. We use more delicate clamps. Gone are the Murphy buttons and Harrington rings and other aids to intestinal anastomosis. We are better sempstresses though the time saving stomach clip

machine has been developed. Technic goes in waves. There is always a yen for something new without reasoning whether it is better. Michel clips which I have seen used for over thirty-five years are still hailed as a new discovery. Catgut is no longer home cured much to the safety of the patients. We had tubed catgut forty years ago—St. John Leavens. We are again on the upwave in the use of silk. The detachable blade knife has driven out the old scalpel. This is a real loss for the new knife has not the balance that makes for good dissection. But it was very difficult to obtain a proper edge on the old knife. We respect our tissues more. Operating is more delicate. Mass ligation is out. Patients are not lifted off the table by retractors. Very little surgery is done against the clock. Gentle surgery and careful hemostasis have proven in most cases more important than time. However, there may be a loss through this disregard of time. Habits of dawdling and waste motion may be established.

So why is surgery safer? It is still hard to definitely state. We operate on more desperate risks, operability of cases has risen, we have more old people. We are not better experienced than some of the famous oldsters but we, perhaps, know our way around a little better. We are not better craftsmen. How many of us, if we had to pioneer as the inventors of surgery did, would succeed? We may put down these factors as at least partly responsible for the improvement;—understanding of physiology, understanding of pathology, improved diagnosis due to better methods and knowledge, judgment of time to operate, pre-operative preparation, better anesthesia, increased technical knowledge, post-operative care, adjuvants such as insulin, radiation, chemo-therapy, mental attitude of patients, hospital facilities.

Whither may we be tending? This may be wishful thinking—away from the occasional operator to the surgeon of long training. Add to this opportunities for this training—more teaching in the extra mural institution, better co-operation in the use of special knowledge and skill, better scientific viewpoint, better physiological and pathological knowledge, the development of chemo-therapy. All fields of surgery seem to be covered but many crudely.

I am of the belief that this era reviewed has but laid part of the ground work for what will be a most rapid advance in our science and art, both in surgery and medicine.

## PANEL DISCUSSION ON PREVENTIVE INOCULATION

*Henry E. Utter, M.D., Chairman*

*Dr. Utter:*—This evening's program is to be devoted to the subject of preventive inoculations. Smallpox vaccination has for many years been accepted as a means of preventing this disease. This is such a well established procedure that it will not be included in this program.

Typhoid inoculations have proven their efficacy during the past thirty-five years. It has been agreed upon by the members of this panel that parents whose children are intending to travel in this country or abroad or those who attend summer camps which permit their campers to take extended trips away from the main camp, should be advised of the value of this means of preventing typhoid fever.

Twenty-five years have elapsed since diphtheria has become one of the preventable diseases and since the end of 1933 whooping cough has joined the list of those diseases which may be controlled or at least partially controlled by preventive inoculations. Tetanus has more recently entered the group of preventable conditions. We have included measles in the discussion owing to the fact that we are now able to attenuate the potency of this virus.

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Presented before the Providence Medical Association, May 6, 1940.

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## TETANUS

HENRY E. UTTER, M.D.

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Preceding the days of immunization against diphtheria when we used diphtheria antitoxin we were always confronted with the possibility of serum sickness. Today when we immunize against diphtheria we not only eliminate the disease but also we do away with the necessity of giving antitoxin with its resultant allergic manifestations.

Until a method of immunizing against tetanus was perfected dangers of severe reactions due to tetanus antitoxin gave us much concern. It is un-

necessary to take up the symptoms of serum sickness. We are all unhappily familiar with the dangers from the use of tetanus antitoxin.

Tetanus is not a common disease although there have been some thousand or more cases reported in this country annually. It would almost seem that inoculation against a disease of such a low incidence was superfluous but the fact remains that the more we learn of allergy, its increasing frequency as well as our advancing knowledge in its recognition, the more we appreciate the importance of avoiding the sensitization of our patients to horse serum or other animal sera. So, in the instance of tetanus, we are inoculating against this disease primarily to eliminate the use of horse serum; of course we also eliminate the disease itself.

Work has been carried out by Ramon and many others in the past fourteen years to produce the satisfactory tetanus toxoid, free from horse serum, which we now employ in the prevention of this disease.

Plain toxoid was used at first and as with diphtheria in three doses. This procedure has now been replaced by the use of two doses of the alum precipitated tetanus toxoid in combination with diphtheria toxoid. Persons who have been previously immunized against diphtheria may be given tetanus toxoid alum precipitated in two doses. Infants and children who have not been protected from diphtheria should be given two doses of the combined diphtheria and tetanus toxoid. The interval between doses should be from six weeks to three months.

Following the first dose or the primary stimulus the antitoxin level in the blood is raised only to 0.01 or 0.04 unit per cc of blood. After the second dose the antitoxin titer is raised, within one week, to as low as 0.1 a unit in some individuals to as high as four to six full units per cc of serum in others. Now it is found that although the amount of antitoxin does decrease rapidly after some weeks that there is maintained a minimum basic level of about 0.1 unit. If after two or more years another dose is given the antitoxin level will rise twenty fold or more within two or three days. The use of combined toxoid has decided advantage over the use of tetanus toxoid alone in that the antigen of one seems to stimulate the other and the resultant diphtheria and tetanus antitoxin produced in the blood is greater than when either is given alone.

We have no test such as the Schick Test in diphtheria to determine the immunity against tetanus. Several observers have taken as the criterion of the amount of antitoxin necessary for protection that which is produced by the injection of 1500 units of tetanus antitoxin. This varies from 0.1 to 0.25 units per cc of blood serum.

As a result of this observation we accept the protective level produced by two doses of tetanus toxoid as sufficient to eliminate the possibility of tetanus. Two doses of tetanus toxoid will maintain an antitoxin level equivalent to that produced by the 1500 units of tetanus antitoxin. If, however, the level does fall a dose of tetanus toxoid given in the event of a wound will stimulate the antitoxin to rise well above the necessary amount for protection against tetanus. It is also believed that the presence of the tetanus bacillus in a wound would be sufficient stimulus without the use of the extra dose of toxoid. However, in the light of present knowledge we will be wiser to give a third dose of toxoid if a person has a wound two or three years after the initial immunizing process.

It must be remembered that the first dose of tetanus toxoid does not sufficiently protect an individual and in case of a wound of questionable nature before the second dose has been administered tetanus antitoxin should be used. It is perfectly possible that the second dose of tetanus toxoid given at this time might raise the antitoxin titer sufficiently to protect but we might feel a greater degree of security if the second dose has not been administered, in using tetanus antitoxin. However, after the second dose has been administered there is no longer any necessity for the use of antitoxin.

There is in children little or no reaction to either the tetanus or combined toxoid. The parents should, however, be warned that the presence of the hard nodule under the skin should cause no concern. In older patients there may be some local reaction with swelling and soreness but there is rarely a constitutional reaction of any kind. Some allergic manifestations have been reported from proteose used in the preparation of toxoid. Physicians might feel justified because of this in doing an intradermal test before giving the second dose.

The use of tetanus toxoid produces a lasting immunity while the use of tetanus antitoxin gives such a short period of protection that cases have been reported where tetanus has supervened owing

to the persistence of tetanus bacillus in a wound several weeks after the original injury and injection of tetanus antitoxin. Another interesting fact has been brought out recently in a studied series of tetanus that in many there was only the history of a punctured wound without there being any external evidence of a wound. This stresses the importance of the danger of the simplest type of such a wound being the cause of tetanus.

Several groups of individuals should be protected against tetanus. Children who are the subjects of allergy should most certainly be immunized. Children who take lessons in horseback riding or attend summer camps where this recreation is a feature should be immunized. Industrial workers who are subjected to injury and soldiers particularly those in the cavalry should be protected. It is a simple matter to protect all children by use of combined toxoid.

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## IMMUNIZATION AGAINST SCARLET FEVER

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Immunity to scarlet fever is determined by the Dick test. This is done by injecting intracutaneously an accurately measured amount of toxin. The test must be read between 20 and 24 hours after the injection. Any redness, however faint, that is more than a centimeter in diameter means a positive test. This test is probably extremely accurate, not 100% but nearly so. The objection has been raised that the test shows immunity to the toxin and not to the streptococcus itself. Experience has shown that from a practical standpoint the immunity is good for both. Probably the situation is parallel to that of diphtheria where immunity to the toxin makes the tissue of the throat a very poor culture medium for the bacteria.

Persons who give a positive test can be immunized. This is done by injecting 5 graduated doses of toxin at weekly intervals. Experience has shown that the results are not quite but nearly 100% successful.

Several objections have been made to this procedure. It has been claimed that the immunity is to the toxin alone and not to the streptococci, but this objection is not valid. Another criticism is that the reactions are too severe. The common reactions consist of sore arm, fever, vomiting and joint pains, all these may be very severe indeed. However, these common reactions can be avoided by regulating the size of the injection. The first injection can be regulated by the size of the Dick test and the following injections regulated by the size or the severity of the preceding one. A sufficient number of injections must be given so that the total dosage of toxin is 115,000 skin test doses. This means that as many as 10 or 12 injections may be required which is perfectly feasible in institutional work but difficult in private practice. Allergic reactions are always possible because of the protein and protein derivatives in the broth of the culture medium. Probably the only important danger is that which occurs when the injections are given to persons who have had some rheumatic infection. In this case the rheumatic infection may be activated with serious results.

Active immunization against scarlet fever, as I have described it, is useful in institutions. The staff of a hospital where there is exposure to acute illness, and especially in a contagious disease hospital, should be immunized. Also this immunization is helpful in an orphanage or institution for children where protecting the children may be of considerable benefit to the children themselves and the institution. In private practice, except under special circumstances, this immunization is hardly worth while.

Passive immunization can be produced by the injection of commercial antitoxin or human convalescent serum. This passive immunity, which lasts only a few weeks, is often very helpful in epidemics in institutions.

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## WHOOPING COUGH

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The seriousness of the whooping cough problem can be best appreciated by the 1928 U. S. Public Health Service Report which stated that in the registration area of the U. S., 6,000 children under 5 years died of whooping cough. It exceeds

deaths from diphtheria, scarlet fever, measles, and tuberculosis and exceeds the number of deaths from measles and scarlet fever combined. No other common disease of early childhood varies as much in duration and severity.

Pertussis prophylaxis is a very controversial subject and has been debated considerably and at great length in the past six years. Disagreement, though not as general as several years ago, still is present. There is a tremendous amount of important evidence in its favor, but inasmuch as some failures do occur, it is up to us to weigh the evidence and decide not so much whether it is a perfect procedure, but rather whether it is a worthwhile procedure to the majority of our patients.

Because biological and serological tests are either not available or not too practical we must depend upon statistics for an evaluation of the problem.

The use of Pertussis vaccine in prevention of whooping cough was given its greatest stimulus by the report of Sauer in 1933 on a group of 500 children followed over a period of 5 years; at that time none of the exposed group had contracted whooping cough. In a later report, 1935, a summary of his results together with reports of 74 physicians in 24 states using Sauer vaccine showed protection in 92%.

The Grand Rapids experiment (1932-1937) consisted of 4,000 cases. Of 2,000 vaccinated cases 13½% of the exposed children developed whooping cough. In the non-vaccinated group 75% of the exposed children developed whooping cough. In another experiment, Kendrick and Eldering reported on 2,300 cases, half of whom were controls. In the vaccinated group 118 children were exposed, and 15 cases of whooping cough developed, or 11.8%. In the non-vaccinated group 149 children were exposed, with 111 cases of whooping cough, or 74.6%.

From 1935 to 1939 inclusive, Sauer reports, in a personal communication on the study of 2,616 children, only 9 failures. This group consists of a series immunized by private physicians; another series conducted by the Evanston Health Department Whooping Cough Clinic; and a series conducted at a large Chicago orphanage. Of this group of 1,122 vaccinated by the Health Department there were 128 known exposures with 6 failures. At the same time there were reported 290 cases of whooping cough in Evanston.

The reports of Park, Daughtry-Denmark, Quillian, Ravenel and others most all indicated the incidence of pertussis after exposure about 6 times greater in the non-vaccinated group than the vaccinated.

At the 1938 Academy of Pediatrics meeting in California, Chairman Faber responded to the question "Has not the tone of opinion regarding the effectiveness of prophylaxis changed in the last two years?" with the answer that there was a decided change in favor of the vaccine. Some failures will result, but it now appears that 85 to 95% will be protected for at least 5 to 8 years, and the failures will have mild attacks. As a matter of fact, these results are nearly as good as with diphtheria prophylaxis.

No vaccine can be 100% perfect when the disease itself does not offer a complete immunity in many instances, viz. the occurrence of whooping cough in parents who have had the disease in childhood.

The Sauer vaccine is a suspension of freshly isolated strains of Phase 1 Hemophilus Pertussis Baccili grown on human blood. There are several other preparations grown on sheep blood medium or modified somewhat. They are all prepared, however, to contain 10 billion organisms per cc. In the last two years Sauer has been using a double strength preparation containing 20 billion organisms per cc.

It is interesting to note that the vaccine influences the blood picture in the same way that an attack of whooping cough does, viz. leukocytosis and lymphocytosis. The double strength seems to produce the more typical blood counts.

*Dosage of Sauer Vaccine.* Park, in 1935, reported results of study and concluded that the efficacy of prophylaxis depends primarily on sufficient dosage. Sauer makes the same statement. The higher the dosage, the better the protection. A dosage under 40 billion gives very little immunity. Sauer recommends a total of 100 to 120 billion organisms in divided doses given at intervals of three weeks. The dosage has been divided into three or four doses. I have been in the habit of dividing the doses in 0.5, 1.0, 1.5 and 2.0 cc. at two to three week intervals. It seems that Dr. Kendrick at Grand Rapids has been using a similar division of dosage with satisfactory results. Sauer has been giving three doses of the double strength—1.0, 2.0 and 2.0 cc, or in older children—1.0, 2.0 and 3.0 cc.

Park in 1935, and later Kristensen and Larsen in complement fixation studies showed highest complement fixation titres in the first two weeks after injection. In the past two years Sauer has performed several hundred pertussis complement fixation tests before and after Pertussis vaccine injections at the Evanston Pertussis Prevention Clinic and at a large Chicago orphanage. He finds the highest complement fixation with the double strength vaccine given at three week intervals.

Following the discussion by the members of the panel, the chairman offered the following summary.

*Tetanus:—*

That all allergic children should be inoculated.
That all industrial workers should be protected.
That combined toxoid should be given to all little children.
That tetanus toxoid may be given to those previously protected from diphtheria.
That none of us have seen a reaction of any kind.

*Scarlet Fever:—*

That the Dick Test should be read within 20-24 hours.
That any degree of redness means a positive test.
That the chief use for scarlet fever toxin is to prevent the spread of disease in institutions.
That upon the appearance of a cycle of severe scarlet fever preventive measures should be carried out more generally.

*Measles:—*

That convalescent serum is the most satisfactory method of modifying measles.
That there is no reaction following the use of the serum.
That Placental extract is the next most effective means of modifying measles.
That 2 cc should be given to children under five or six years of age and 3 or 4 cc may be given to children above five or six years of age.
That the earlier in the period of incubation the serum is given the more effective the results.

*Whooping Cough:—*

That the Sauer vaccine is the most valuable to use in preventing whooping cough.
That children should be inoculated in the second six months of the first year.
That there is no objection to giving the whooping cough vaccine as early as three months if the parent or physician deem it advisable.
That immunity is somewhat dependent upon the size of the dose: infants should be given the minimum of 100 billion and other children 120 billion.

*Diphtheria:—*

That nine months of age is the time to start the procedure but there is no objection to the inoculations being given as early as six months.
That two doses of combined diphtheria and tetanus toxoid, or three doses of plain toxoid-diphtheria, or two doses of diphtheria alum precipitated toxoid provide ample protection throughout childhood against diphtheria.
That the use of combined toxoid at present seems to be the method of choice.
That the Schick Test should be done six or eight months after the completion of the course of inoculations.

In the panel discussion on "Immunization" Dr. Harold G. Calder spoke on "Measles" and Dr. Earl F. Kelly on "Diphtheria." Dr. Calder's and Dr. Kelly's papers will appear in the next issue of the JOURNAL.

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**BENJAMIN RUSH**

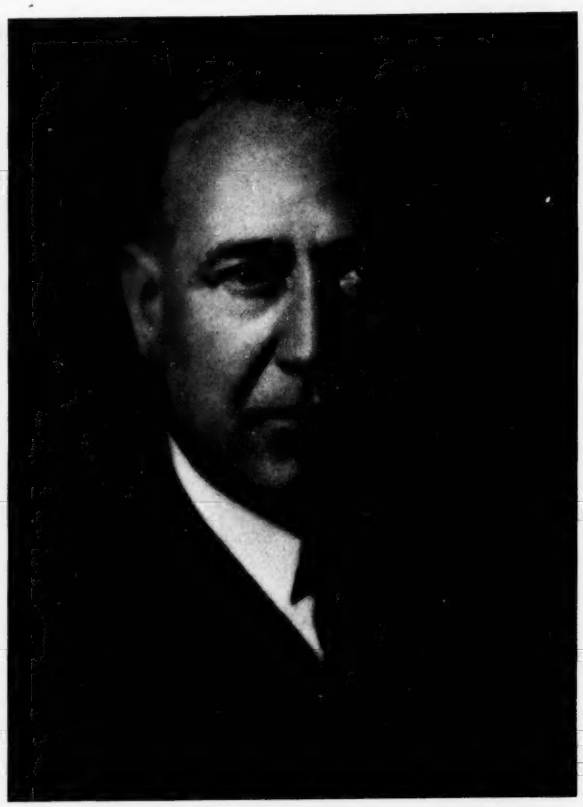
*From the Address on Medicine by William Pepper, M. D., Newport, R. I., June 1899:*

Occasion waits for no man. I am afraid that in our day of refined diagnosis it not rarely happens that the chance of effective interference in acute disease is lost while we examine the secretions and record the temperature and search the blood.

Sydenham wisely said: "I well know that the chance of a patient's death or recovery depends chiefly, if not wholly, upon the treatment of the first few days."

Once more, the statistical method, which has done such good service in checking perturbative treatment and in determining the natural history of disease, was unknown in the days of Rush. It would have been impossible, with the faulty diagnosis of that time. For indeed we are learning, that many of the conclusions based upon it during the past fifty years are inconclusive in the light of the more exact differential diagnosis of today. We shall never again bleed for the name of a disease. Neither Sydenham nor Rush did that, though their less wise imitators did.

The Journal A. M. A. XIV: 593, April 26, 1890.



FREDERIC VINAL HUSSEY, M.D.

President of the Rhode Island Medical Society

1941-1942

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## TERMINOLOGY OF TUMORS

The increased interest in cancer has served to emphasize the vagaries of oncological terminology. While the busy practicing physician will be able to interpret for himself the names of tumors that he hears or reads of he may be "hard put to it" when asked to explain these terms to patients or other laymen. It seems desirable, then, to reduce the naming of tumors to a simple system or formula.

The names applied to most physical objects are based upon morphology. Thus, in the animal kingdom, we distinguish between a horse and a dog largely on the basis of form and structure. The same is true of the naming of tumors, except that here we utilize the morphology of the cells which make up the tumor, visible of course only with the aid of the microscope. Since tumor cells are derived from, and resemble the cells of normal tissues, we name them by adding syllables or suffixes to the names of the corresponding normal tissues. There are fifteen different kinds of cells in the body (some histologists say seventeen). We may therefore have thirty names for tumors, one for a benign and one for a malignant tumor corresponding to each normal type of cell. All additional names are either synonyms or subdivisions of these.

Normal body tissues are divided into two main divisions, (1) connective tissues and (2) epithelial tissues. Benign tumors of connective tissue are named by adding the suffix "oma" to the names of the normal tissues. Thus, a benign tumor of fibrous connective tissue is called a "fibr-oma" and a benign tumor of fatty connective tissue a "lipoma". If the connective tissue tumor is malignant an additional syllable "sarc" is inserted. Hence, a malignant tumor of fibrous connective tissue is called a "fibrosarcoma" and a malignant tumor derived from or made up of fat cells is called a "liposarcoma".

Normal epithelial tissues are divided into two groups (1) the glandular epitheliums and (2) the squamous epitheliums which cover surfaces. Benign tumors of glandular epithelium are named by adding the suffix "oma" to the usual prefix for gland resulting in the word "aden-oma". If the tumor is malignant the syllable "carcin" is inserted and we then have the term "adenocarcinoma". It is customary to add to these terms the name of the particular glandular tissue concerned, as adenoma of the breast or adenocarcinoma of the colon. Benign tumors of squamous epithelium always assume a branching, tree-like structure. For this reason they are named by adding the suffix "oma" to the prefix which indicates this structure giving us the word "papilloma". Since malignant tumors of squamous epithelium tend to differentiate so as to resemble skin (epidermis) they are named by adding the suffix "carcinoma" to the prefix which means skin-like (epidermoid) and we have the designation "epidermoid carcinoma". The term "epithelioma" is often used as a synonym. The word cancer, which originally had a somewhat specific meaning, has now come to be accepted as a general term, including all malignant tumors.

The above, while simple enough for lay consumption, is thought to be sufficiently comprehensive to serve as a basis for a physician's classification of the confusing terms encountered in this field. For example—if names which are derived from such sources as the names of men or from peculiar microscopic variations of cell types can be fitted into the above scheme the situation should be clarified. There remain, of course, certain obscure tumors which because of our inexact and limited knowledge cannot yet be accurately fitted into any scheme of classification.

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## TUBERCULOSIS RESPONSIBILITY IN PROVIDENCE

Providence has a hospital for the treatment of tuberculosis. Its equipment, while partially modernized, still harps back in many ways to the days when patients with tuberculosis were sent to a sanatorium to die rather than to be treated. The treatment, because of antiquated equipment and methods and poor organization, is cumbersome, time-con-

suming, and inefficient. This is hardly excusable in these enlightened times. Tuberculosis is generally considered to be a preventable and curable disease, and every indication is that this consideration is true. To prevent it and cure it, however, requires modern methods of control and treatment. Such methods are not available where they are most needed in the City of Providence.

True, the death rate from tuberculosis has been steadily falling. Some agencies in the city and state have worked sufficiently well to obscure the evasion of responsibility on the part of the city government and city institutions. But the burden has been too great and some of the responsibility has had to be cast aside to its proper place, the city government. The city has had plenty of time to act on this, but it continues to shirk its duty. This failure threatens to destroy much of the gain already made.

The private physicians, the district nurses, the Providence Tuberculosis League, and other groups including the citizens of Providence in general, are ever taking a more enlightened attitude. They are willing and eager to give all possible aid in eradicating this disease which is the greatest killer of our young men and women.

Shameful it is that our elected servants should shirk their responsibility so as to cripple the attack on this plague. If the medical and lay citizens of Providence fully appreciated how much could be done but how little actually is done, it is hardly possible that they would stand by silently. They would not let those to whom they have entrusted their affairs betray them in such an important problem. These blundering ways should be promptly investigated and set right.

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## LETTER TO THE EDITOR

RHODE ISLAND MEDICAL JOURNAL,
TO THE EDITOR:—

Did anyone else have the experience I had a few days ago? I had a patient sixty-one years of age with acute cholecystitis and apparently an obstruction to the biliary tract who was acutely ill, therefore, sadly in need of hospitalization. After attempting to gain admission to three hospitals of which I am a staff member and being refused by the admitting office because there were no beds available it made me wonder as to the cause of the congestion. My conclusion was that it was due to the Blue Cross. This is not the fault of that fine plan of insurance, but rather a combination of negligence on the part of doctor and patient. As an illustration, I had a sixty-one year old female patient upon whom I performed a hemorrhoidectomy and in my opinion was ready to go home after seven days. She preferred to stay in the hospital on one pretext or another for eighteen days as she was a member of the Blue Cross and wanted to get the full benefit. It has been my experience except in rare cases that eight days hospitalization is sufficient for this type of operation. It would seem that I kept in use a bed for not even an invalid, when probably a serious case had to wait. This seems to apply to many minor illnesses that previously would have been taken care of at home. When this experience is multiplied by the three hundred or more physicians in Providence it becomes quite a problem because naturally it is much easier to take care of patients at the hospital so it would be preferred by the doctors. What will be the solution of this problem? Shall we attempt to build new wings at the various hospitals to accommodate the influx of these patients or curb the admission of minor illnesses and admission for laboratory tests? It seems as if there must be more co-operation between hospitals, patients and doctors until we can have additions to our present hospital set-ups or a different factor governing the length of stay of practically cured cases, or acutely ill patients will suffer needlessly.

DISAPPOINTED SURGEON

May 3, 1941

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## CLINICAL PATHOLOGICAL CONFERENCE

### RHODE ISLAND HOSPITAL

Peters House, November 26, 1941

*Case presented by Dr. Herman A. Lawson*

A housewife, age 63, born in Greece, was first admitted to the Rhode Island Hospital in April, 1937. She then complained of cough, fever and sweats for one month. She complained also of general bodily aching and ease of fatigue. She described a pain in both shoulders and arms, which seemed to originate in midpoint of sternum and was noticed only when she had fever. She thought she suffered from fever one year previously when she was visiting in Greece. She had mild dyspnea on exertion.

*Physical examination* showed temperature 102.6 (rectal), pulse 110 and respiration 30, B. P. 130/70. On admission House officer described significant physical signs in left lung, but second House officer did not agree.

*X-ray* on admission showed no evident consolidation; very slight increased thickening in region of the right apex probably due to an obsolete tuberculosis. Heart shadow not enlarged.

*Laboratory work* showed nothing remarkable—Wassermann negative; urine negative (sediment not examined), RBC 4.2; Hglb. 86 Sahli; WBC 5800; Polys. 60, Lymph 40.

*Blood chemistry:* B.U.N. 30, Creatinine 1.7, Glucose 84.

*Agglutination tests:* Widal negative, Undulant fever negative.

Temperature returned to normal on second day. Patient was free of symptoms and complaints and was discharged on the eighth day, disease undiagnosed.

*Second and final admission* was on July 23, 1939, two years and three months after discharge.

Chief complaint was pain in left chest of four days' duration. She stated that she had been perfectly well until two weeks before when she developed pain, redness, swelling on inner side left leg. This cleared up with use of heat. One week later she developed sudden sharp pain in right side of chest with dry cough that increased chest pain. This lasted only a few days. Four days before admission she developed similar pain in left chest anteriorly, the pain being accentuated by coughing or breathing. No chills or fever.

*Physical examination* showed temperature 100.8, pulse 106, resp. 24. B.P. 130/70. A well developed, obese, gray-haired, elderly woman propped up in bed. Respirations were shallow and grunting and she seemed in considerable discomfort. Skin showed moderate pallor, was very warm and dry. Tongue cyanotic and showed thick white coat. Teeth lower plate; upper teeth very dirty with alveolar pus. One pea-sized submandibular gland, not tender. Chest showed slightly diminished excursion left, with slight dullness and diminished breath sounds at left base. Vocal fremitus absent. Moist, sticky rales on inspiration. Right chest showed a few rales at lower anterior chest with high-pitched bronchovesicular breath sounds. Heart appeared enlarged to left. Cyanosis of finger nails and feet and toes. There was swelling of the right leg below knee with pitting ankle edema. The lower one-third of both extremities showed bluish discoloration, but no changes in temperature, and a very good dorsalis pedis pulse in each foot. No tenderness along course of superficial veins.

*X-rays* on admission showed changes in left lower lobe consistent with infectious process, and changes in shape and size of heart consistent with arteriosclerotic heart disease. On the fifth day it showed area of homogeneous density at left base obscuring left border of heart, left diaphragm and costophrenic angle. The right costophrenic angle was shallow. Heart enlarged and aorta widened; trachea in midline, consistent with fluid at left base and perhaps at right base.

*E. K. G.* showed nothing except increased rate and left axis deviation.

*Urine* showed occasional traces albumen and on two occasions few granular casts.

Wassermann and Hinton negative.

Blood chemistry normal—B.U.N. 15; Glucose 100.

*Impression*—Thrombophlebitis with pulmonary infarctions. This diagnosis was confirmed by visiting physician who thought there was fluid in left chest.

The patient remained in the hospital for forty-four days and then expired. During this time there were frequent and repeated episodes of pain and swelling in the extremities, sometimes with redness and tenderness over the more superficial veins. On the fourth day the left arm was involved; on the eighteenth day the left leg; on the twentieth day the left side of the neck, apparently thrombophlebitis of the left internal jugular vein. On the thirtieth day the right arm became swollen, red and painful along the flexor surface. On the thirty-sixth day edema of the lower legs and ankles and a pitting edema over the sacrum were noted. There was dullness to flatness over both bases with diminished breath sounds.

A chest tap was done on the fortieth day and six ounces of thin, cloudy, slightly bloody fluid was obtained. Culture of this was sterile; smear showed some pus cells but no organisms. During her stay in the hospital the patient complained of a sore mouth for which she was given perborate. She apparently also had breakdown of the skin of the back. She continued to have fever; 99 to 100 with occasional rises to 101. The last day or two her temperature rose sharply and she expired on the forty-fourth day.

*Blood counts:*

| | RBC | Hglb. | WBC | |
|---|---|---|---|---|
| 2nd day | 3.97 | 11.4 | 14,450 | Polys 81. |
| 20th day | 4.65 | 10.0 | 9,750 | |
| 41st day | 5.05 | 13.0 | 23,600 | |

Treatment was symptomatic except for an effort to alter coagulability of blood by injections 50 c.c. sodium citrate solution intravenously. This produced no demonstrable change in clotting or bleeding times which remained normal.

*Discussion*

*Dr. Herman A. Lawson:* The story is undoubtedly that of thrombophlebitis involving all four extremities and a vein in the neck and associated with pulmonary infarction occurring before admission to the hospital. Laboratory studies, such as electrocardiogram, Wassermann, etc., were not remarkable except for the blood counts which showed mild anemia and polynuclear leucocytosis.

There are several questions that come up. First of all whether or not there was any relationship between the first and second admissions. No diagnosis was made in 1937, but I think it is quite possible she may have had some acute infection at that time. Nothing was found on X-ray examination of the chest. No evidence of thrombophlebitis was observed at that time. It is well known that one may have pulmonary infarction resulting from symptomless thrombosis and that the most serious and dangerous pulmonary complications are associated with this type. The time limit is not against that possibility, since we have within a few weeks had demonstrated at our Saturday morning meeting a patient who has continued to have repeated episodes of pulmonary infarctions over a period of years.

I wondered, too, whether there was any relationship between this illness and the fact that she thought she had fever while in Greece a year previously. Of course, I wondered why this patient should have this migrating thrombophlebitis occurring in veins all over the body. What the etiology or pathogenesis is I have no idea. It is thought by some to be related to foci of infection. The house officer, on admission in 1939, described a rather bad condition of the gums, which showed inflammation or pus. I can see no reason to doubt the diagnosis of thrombosis with pulmonary infarction. She gradually became worse. There was no sudden acute episode to suggest she died of a large pulmonary embolism, but she died of some condition associated with a gradual decline in her health. The white blood count was 24,000 three days before she died.

At the time she had a high fever there is a Nurse's note that she apparently had a break in the skin of the back, and I wonder whether or not that may have been a focus of entry, causing septicemia. There was apparently no blood culture taken during the stay in the hospital. The patient had a sore mouth for which she was getting sodium perborate, but there is no description of the sore mouth. It may have been simply a severe inflammation or suppurative infection of the gums which were already involved when she came into the hospital.

We could say this patient died of so-called terminal bronchopneumonia. She had persistent changes in the chest until the very end. The fluid removed from the chest was sterile. No organisms were seen in the smear. Cases of pulmonary infarction have been described that have been followed by secondary infection, particularly areas of pneumonitis and pleuritis which may lead to necrosis of the lung and extension into the pleural cavity, causing empyema.

*Dr. Irving A. Beck:* I was interested by the anterior chest pain radiating to the arms and shoulders, when fever was present. It suggests that the pain was anginal in character. It can be explained as due to an inadequate blood supply to the myocardium with the tachycardia and elevated metabolism of the febrile state. I would expect some degree of coronary sclerosis to be found to explain this inadequate flow.

A great variety of etiologies has been ascribed for the heterogenous group of cases making up the syndrome of thrombophlebitis migrans. Buerger in 1909 clearly separated out one group with a more or less specific histological picture, which is a precursor or concomitant of the arterial disease which bears his name. Carcinoma, metastatic to the veins, can also produce the clinical picture. These are the only forms in which the histology can be regarded as specific (except those cases in which there are actually infected emboli or thrombi, as may occur in the course of a bacteremia). Among the various other causes ascribed are syphilis, foci of infection, gout, tuberculosis, rheumatic fever, and allergy.

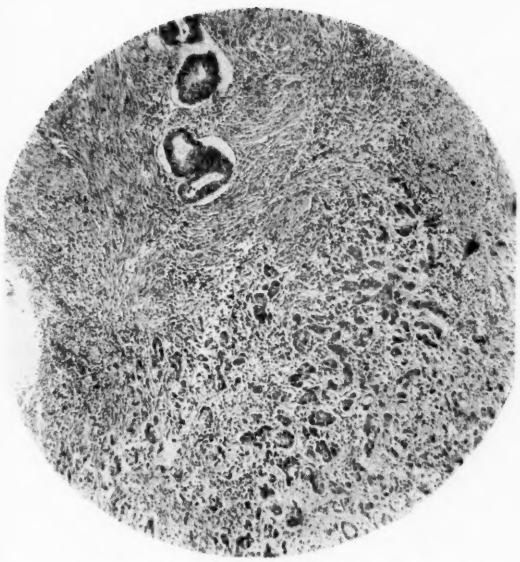

Fig. 1. The primary carcinoma of the gall bladder. Low power showing infiltration of cords of tumor cells into the muscle coat.

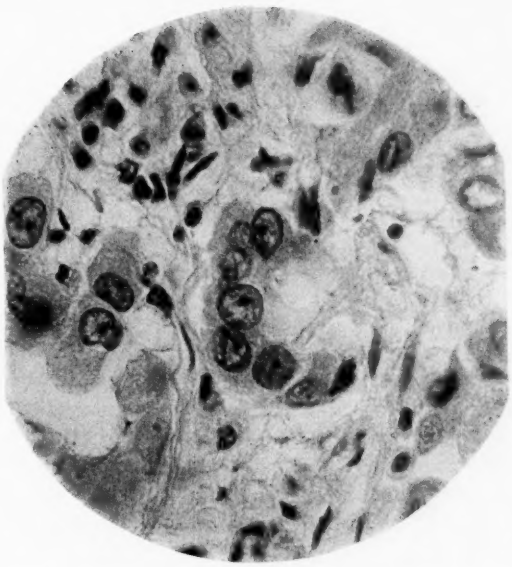

Fig. 2. Metastatic carcinoma in lymph node. High power showing cell detail.

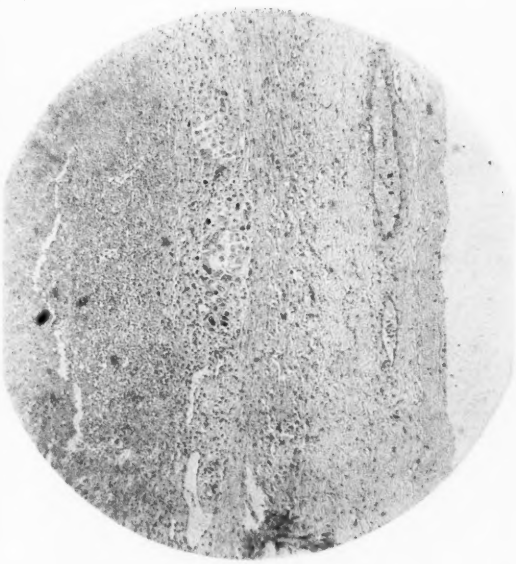

Fig. 3. A portion of the wall of a thrombosed vein. Tumor cells are seen in the periphery of the thrombus (center).

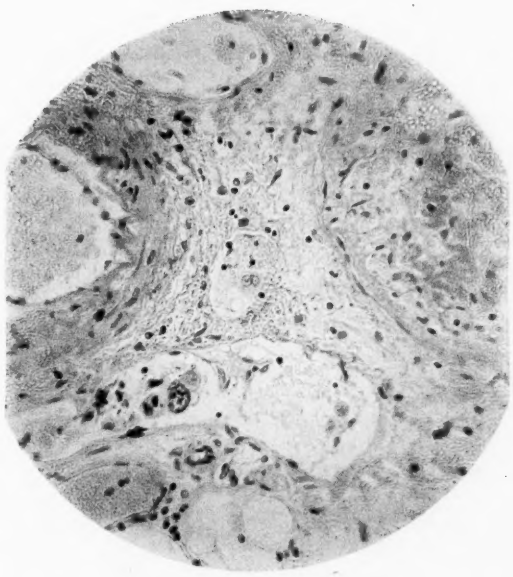

Fig. 4. The edge of a thrombosed vein is seen at the right. Below and to the left is a perivascular lymphatic within which are tumor cells.

None of these has been proved, unless the last, i. e. allergy to tobacco, is the cause of the Buerger's type. I don't think I have anything to add, as regards a definite etiology, in this particular case.

*Dr. B. Earl Clarke:* At the postmortem the one important finding on external examination was marked edema from the knees downward.

The left pleural cavity contained 200 c.c. of bloodstained fluid and the right 200 c.c. At the bases of both lungs there were several small areas that were hard and on section red, and somewhat wedge-shaped (infarcts). These measured up to 2 cm. in diameter at the pleural surface. In the costophrenic area of the base of the right lung was a similar area which on section was grayish-white. Within the artery leading to this area was an adherent grayish thrombus. This is definitely an older infarct and probably dates from the attack of pain in the right chest.

In the spleen were several similar small infarcts.

The gastro intestinal tract was essentially normal, as was the liver.

The gall bladder wall was observed to be thick and its inner surface covered with a grayish, friable material within which were several small stones.

Small infarcts were also found in the kidneys.

The veins were of especial interest. Within the vena cava, beginning about 2 cm. below the entrance of the renal veins, was a thrombus which extended downward to the bifurcation of the common iliacs. It did not fill the entire lumen. The external iliac veins were completely occluded by dark, red, friable thrombus. The internal iliacs were partially obstructed. The jugular veins were found to contain similar clots.

The microscopic findings were especially interesting (sections shown). There was a carcinoma of the gall bladder (Fig. 1). In many sections of thrombosed veins there are found within the organizing thrombi (Fig. 3) and within the tiny vessels of the vein wall and within the perivascular lymphatics (Fig. 4) groups of tumor cells of the same morphology and staining characteristics as the tumor in the gall bladder. The only other metastatic tumor was in the para aortic lymph nodes. (Fig. 2).

*Pathological diagnosis:*

1. Carcinoma of the gall bladder with metastasis to the veins and para aortic lymphnodes.
2. Thrombosis of many veins.
3. Infarcts of lung, spleen, kidney and brain.

## RHODE ISLAND MEDICAL SOCIETY

### Minutes of the One Hundred and Thirtieth Annual Sessions

### Meeting of the Council

May 8, 1941

The regular meeting of the Council of the Rhode Island Medical Society was held in the Library building Thursday, May 8, 1941. The meeting was called to order by the President, Dr. Lucius C. Kingman.

Those present were Drs. Kingman, Mowry, J. P. Jones, Hammond, Abbate, Hussey, Miller, Donley, Buffum (Assistant Secretary), Partridge, Ashworth (Assistant Treasurer) and Wells.

The Secretary read the minutes of the meeting of the Council of January 16, 1941. The minutes were approved.

Dr. Mowry then read the Treasurer's report, discussing certain features of the report. He noted that, while the amount on hand was nearly five hundred dollars less than last year, expenses had increased nearly one thousand dollars.

Dr. Mowry then reported the names of those placed on the retired list as follows:—

Dr. Irving S. Cook of Georgiaville

Dr. Charles E. Hawkes of Greenville

Dr. Joseph T. Roswell of Woonsocket

The Council then voted to approve the Treasurer's report and to transmit it to the House of Delegates.

There being no further business, the Council adjourned at 4:30 P. M., with Dr. Kingman in the chair.

Respectfully submitted,

GUY W. WELLS, M.D.,
*Secretary*

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### House of Delegates

May 8, 1941

The House of Delegates was called to order May 8, 1941, at 4:40 P. M. by the President, Dr. Lucius C. Kingman.

Those present were Drs. Kingman, Mowry, J. P. Jones, Hammond, Abbate, Hussey, Miller, Donley, Buffum (Assistant Secretary), Partridge, Ashworth (Assistant Treasurer), Foley, Tatum, Merle Potter, Bird, Webber, Hacking, Burgess, W. S. Jones, Brackett, Messinger, M. Saklad, Ronchese, Walsh, Southey, Hanley and Wells.

A verbal résumé of the proceedings of the Council meeting that immediately preceded the House of Delegates was given by the Secretary.

The Secretary then read the minutes of the meeting of the House of Delegates of January 16, 1941. The minutes were approved.

The President called for a report of the Committee on Nominations. This was read by Dr. Buffum for Dr. John F. Kenney, the Chairman. The report was approved.

The Treasurer then read his report. The Secretary's report was read and accepted.

The President called for reports of Committees. The following Committees reported:

*Standing Committees*

Committee on Arrangements (Committee on Annual Meeting), Dr. Walter S. Jones.

Committee on Legislation, Dr. William H. Foley.

Committee on the Library, Dr. Herbert G. Partridge.

Committee on Publication, Dr. John E. Donley.

Committee on Necrology, not reported.

Committee on Education, Dr. Jesse P. Eddy, 3rd.

Board of Trustees of the Building, Dr. John P. Jones.

*Appointed Committees*

Committee on Resolutions, Dr. William H. Foley.

Committee on Publicity, Dr. Jesse P. Eddy, 3rd. No report at this time.

Committee on State Policies of Public Health, Dr. Edward S. Brackett.

Committee on Public Health, Dr. Charles F. Gormly (read by Secretary).

Sub-committee on Industrial Health, Dr. Charles F. Gormly (read by Secretary).

Sub-committee on Cancer, Dr. Herman C. Pitts (read by Assistant Secretary).

Sub-committee on Public Health Clinics, Dr. Stanley Sprague. No work, as yet, to report.

Sub-committee on Child Health, Dr. Henry E. Utter (read by Assistant Secretary).

Sub-committee on Maternal Mortality, Dr. John G. Walsh.

Committee on Social Welfare, Dr. William P. Buffum.

Committee on Medical Defense and Grievance, Dr. William A. Mahoney. No work to report.

*New Business*

It was moved by Dr. Buffum that: "Under the present arrangement, when S.U.R. recipients are treated in a hospital, the Department of Social Welfare pays the hospital two dollars a day for such care. Hospital care of a patient always costs the hospital more than five dollars a day and almost always more than six dollars a day. Under these circumstances the House of Delegates of the Rhode Island Medical Society considers that it would be only fair to pay the hospitals not less than four dollars a day for care of S.U.R. recipients and requests the State Department of Social Welfare to give the matter their earnest consideration." The motion was seconded and passed.

Because of changes or proposed changes in the Workmen's Compensation Act, Dr. Walter S. Jones moved the President be empowered and directed to appoint a Committee on the Workmen's Compensation Act, the Committee to consist of five members. The motion was discussed by Drs. Kingman and Messinger. Motion was seconded and passed.

Dr. Brackett moved the President be empowered and directed to appoint a Committee of three to propose revision and printing of the By-Laws and probably the Charter and to report their recommendations to the House of Delegates at the meeting in January, 1942. The motion was seconded and passed.

The meeting adjourned at 5:40 P. M., Dr. Kingman presiding.

Respectfully submitted,

GUY W. WELLS, M.D.,
*Secretary*

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**Committee on Nominations**

The Committee on Nominations appointed by the President to submit to the House of Delegates a list of Officers and Standing Committees for the ensuing year, begs leave to report as follows:

*President*—Frederic V. Hussey, Providence
*First Vice President*—John Paul Jones, Wakefield
*Second Vice President*—
Charles F. Gormly, Providence
*Secretary*—William P. Buffum, Providence
*Assistant Secretary*—Morgan Cutts, Providence
*Treasurer*—Jesse E. Mowry, Providence
*Assistant Treasurer*—
Charles J. Ashworth, Providence

*Legislation, State and National*

William H. Foley, Providence
Francis H. Chaffee, Providence
Earl F. Kelly, Pawtucket
The President and Secretary, ex-officio

*Publication*
John E. Donley, Providence
Alfred L. Potter, Providence
John F. Kenney, Pawtucket
The President and Secretary, ex-officio

*Education, State and National*
Jesse P. Eddy, 3rd, Providence
Charles L. Farrell, Pawtucket
John Langdon, Providence
The President and Secretary, ex-officio

*Library*
Herbert G. Partridge, Providence
Andrew W. Mahoney, Providence
Samuel Adelson, Newport

*Necrology*
Edward T. Streker, Providence
James C. Callahan, Newport
Francis J. King, Woonsocket

*Arrangements*
Walter S. Jones, Providence
Ralph DiLeone, Providence
Edward F. Burke, Providence
The Treasurer, ex-officio

*Delegate*
Guy W. Wells, Providence

*Alternate*
William P. Buffum, Providence

*Auditors*
Robert T. Henry, Pawtucket
Joseph W. Reilly, Woonsocket

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**OBITUARY**

## DR. CHARLES VALUE CHAPIN

Dr. Charles V. Chapin passed away at his home, 84 Keene Street, Providence, Rhode Island, on January 31, 1941 at the age of 85. He was born in Providence on January 17, 1856, the son of Dr. Joshua B. and Louise Value Chapin. He was educated in the public schools of Providence and at the Mowry and Goff High School of this city. He spent his whole life in Providence except for the time spent in medical school in New York City.

He was graduated from Brown University in the class of 1876. From Brown he went to Bellevue Hospital Medical College, New York City, from which he was graduated in 1879. While at Bellevue he formed a lifelong friendship with a fellow intern, Dr. William Gaugas whose sanitary work made possible the building of the Panama Canal when the French had previously failed because of the ravages of malaria and yellow fever among the workmen. On his return to Providence he became a general practitioner until 1884 when he was elected Superintendent of Health, a position which he held until 1932. He was also City Registrar from 1888 to 1932.

As Superintendent of Health he succeeded Dr. Edwin M. Snow, who had filled this position from July 1856. It is interesting to note that from 1856 to 1932 the position of Superintendent of Health was filled by these two men only. Dr. Snow held office for 28 years and Dr. Chapin for 48 years. From 1886 to 1896 he was Professor of Physiology at Brown University. He was a lecturer at Harvard Medical School in 1909 and lecturer at the Massachusetts Institute of Technology School for Health Officers from 1913 to 1922, and the Harvard School of Hygiene and Public Health from 1923 to 1935. Dr. Chapin was President of the American Public Health Association in 1927 and was the first President of the American Epidemiological Society.

Dr. Chapin was a prolific writer. His first book was "Municipal Sanitation," published in 1901. His second book entitled "Sources and Modes of Infection" was published in 1912. This work was largely responsible for his world-wide reputation in the field of public health. The ideas advanced here were new and disregarded a great many of the older conceptions of the modes of infection. Like many new ideas, it created a good deal of discussion but as the years went on this textbook became the most widely used of any textbook in public health by Health Officers in this country and abroad and was a standard work used by the United States Government Medical Services. It really was a masterpiece of well thought out public health measures as related to the sources of infection and how infectious diseases are actually transmitted. One of the most radical recommendations in this textbook was to disregard air-borne infection, belief in which had been maintained for centuries. The result of Dr. Chapin's teaching as outlined in this famous textbook has changed the entire public health procedures in the United States relating particularly to the control and prevention of infectious diseases.

In 1915 Dr. Chapin made a survey for the American Medical Association of all the State Boards of Health in the country, the results of which were published by the Association as "A Report on State Public Health Based On a Survey of State Boards of Health." In making this survey Dr. Chapin for the first time applied a numerical

value to each phase of the health department activities. This was sort of a measuring rod by which the activities of different health departments could be evaluated. In 1917, he published another book, "How to Avoid Infection," a second edition of which appeared in 1921.

He delivered the fourth Sedgewick Memorial Lecture, the subject, "Changes in Types of Contagious Diseases" in 1926. On April 16, 1930 he received the first Sedgewick Medal, presented to him by the American Public Health Association at the banquet of the New England Health Institute held in Boston. On eight occasions he won the Fisk Fund Prize offered by the Rhode Island Medical Society. He also received the Susan Colver Rosenberger Medal from Brown University in 1935. He was the fourth alumnus of Brown University so honored. Previous recipients of this medal were Dr. W. W. Keen of Philadelphia, Chief Justice Charles Evans Hughes, and John D. Rockefeller, Jr. The National Academy of Sciences awarded him the Marcellus Hartley Gold Medal in 1928. These medals he prized very highly. The following honorary degrees were conferred upon him in institutions of learning; Sc.D. Brown University in 1909; Sc.D. Harvard University in 1901; LL.D. Yale University in 1928; and Sc.D. Rhode Island State College in 1932.

On January 29, 1924 the medical scientists of the United States and Canada united in honoring Dr. Chapin at a dinner in Providence in commemoration of his completion of forty years as Superintendent of Health in this city. On January 17, 1927, the Rhode Island Medical Society honored him with a testimonial at the Rhode Island Medical Library on Francis Street. The speaker of the day was George E. Vincent who at the time was President of the Rockefeller Foundation, and who paid Dr. Chapin high tribute as "the leader of them all." During his lifetime, because of his eminent work in public health, he was appointed to many important committees, not only of the American Public Health Association, but also the National Red Cross, American Medical Association and other societies concerned in public health.

In 1934 the Commonwealth Fund of New York published the "Papers of Charles V. Chapin, M.D." This work was begun by Frederic P. Gorham, A.M., Sc.D., Professor of Biology at Brown University, of whom Dr. Chapin was very fond, and edited by Clarence L. Scamman, M.D., a member of the Commonwealth Fund Staff. The foreword in this volume was written by Dr. Haven Emerson who is Professor of Public Health at Columbia University. The writings of Dr. Chapin were reviewed carefully and six papers were selected because they contained material most valuable in the execution of effective public health work.

He began writing weekly articles for the *Providence Journal* in 1917 and continued them for about ten years. The public became very much interested in his articles on Medical Facts and Queries not only because of the eminence of the writer but also because of the manner in which he presented his subjects.

During his lifetime, Dr. Chapin made 133 contributions to public health literature, 22 of which were books and pamphlets, 92 contributions to periodicals and books, six health reports and serial contributions to periodicals, and 13 committee reports.

During his term of office as Superintendent of Health, he took great pride in the preparation of the reports of the Department. These annual reports contained many tables bearing upon different phases of infectious diseases. Because of his long tenure of office some of these tables continued for over a period of almost half a century at the time of his retirement. Many of his ideas were crystallized by studying these tables arranged by diseases, age groups, seasons, mortality and fatality rates. His annual reports were probably studied by more health officers than any other set of reports issued in the United States. His reports of vital statistics were equally fine and were studied by other health authorities.

Also during his years as Superintendent of Health, the need of hospitals for infectious diseases was impressed upon him and it was through his efforts largely that the so-called "City Wards" on the grounds of the Rhode Island Hospital were built and occupied in 1896. The City contributed the major portion of the funds necessary for its construction. Two wards in the same building were provided for, one for scarlet fever and one for diphtheria. Years later the Rhode Island Hospital authorities wished to terminate the agreement with the City because the number of patients had increased considerably and it was thought they might

be a menace to other patients in the Hospital. After numerous conferences the City appropriated the money to build the Providence City Hospital. Dr. Chapin was a member of the building committee and as Superintendent of Health naturally had a great deal to do with the construction. It was his idea, after having visited certain European centers, that it would be advisable to take care of different kinds of contagious diseases on the same floor providing aseptic technique could be rigidly carried out. His ideas were particularly expressed in one building, called the Isolation Ward where, from the opening of the hospital in 1910, all kinds of contagious diseases were treated, with very few instances of cross infection from one room to another.

Ultimately the same technique was introduced to all the wards. Naturally, Dr. Chapin was very proud of this hospital because of the success of this experiment in which medical asepsis was first tried out in this country.

As Superintendent of Health he was Ex Officio Secretary of the Board of Hospital Commissioners from the establishment of the Providence City Hospital in 1910 until he retired in 1932. During all this time scarcely a week went by without his visiting the hospital to follow its work. At the time of his retirement, in recognition of his great interest and his contribution to the improved hospitalization of infectious diseases, the City Council of Providence changed the name of the Hospital to the Charles V. Chapin Hospital. He was deeply appreciative of this honor and was perhaps as much moved by this recognition as he had been by the many other honors which had fallen to him.

Under his direction, Providence was the first city in the United States to establish a municipal laboratory, (in 1888), and now universally employed. In 1893 he made the first experiments in filtering water by mechanical filtration, and Providence was the first city in the United States to discontinue fumigation, in 1905.

Dr. Chapin resigned as Superintendent of Health and City Registrar in 1931 but this did not take effect until January 4, 1932 when the honorary title of Superintendent of Health Emeritus was bestowed upon him.

Dr. Chapin is survived by his wife, whose maiden name was Miss Anne A. Balch, and Mrs. Virginia K. Viall, a sister. He was married May 6, 1886. They had one child, Howard, who was Librarian of the Rhode Island Historical Society until he died September 18, 1940.

JOHN M. PETERS, M.D.
DENNETT L. RICHARDSON, M.D.

Providence, R. I.
April 4, 1941

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## JOHN J. KENNEY, M.D.

The Providence Medical Association mourns the loss of another member, John J. Kenney, M.D., who responded to his last call on November 7, 1940. He died in his 56th year.

Dr. Kenney was born in Woonsocket, Rhode Island. After finishing his preliminary education at Dean Academy in Franklin, Mass., he entered Dartmouth Medical College, where he was awarded his doctorate in medicine. He interned at St. Joseph's Hospital for a year, after which he established an office on Branch Avenue in Providence, where he continued in active practice until his death.

At the time of his death he was of the Consultant Staff at St. Joseph's Hospital, where he had served for many years as Assistant Gynecological Surgeon and Obstetrician. He was also on the Associate Staffs of the Homeopathic and Lying-in Hospitals. He was a member of the American Medical Association, the Rhode Island Medical Society, and the Providence Medical Association.

Dr. Kenney was a conscientious, considerate, conservative and competent physician. He was modest and simple in his tastes and desires, neither desiring nor seeking publicity. He was satisfied and content in the consciousness of duty to his patients and to his family well done. His attributes earned for him the confidence and loyalty of his patients, the regard and esteem of the confraternity of physicians and the appreciation and love of his family.

Resolved, that the sympathy of the members of The Providence Medical Association be extended to Mrs. Kenney and his family.

Resolved, that this obituary be inscribed in the records of the Association and a copy be sent to Mrs. Kenney.

William S. Streker, M.D.
William R. McGuirk, M.D.

# RHODE ISLAND MEDICAL SOCIETY

## *List of Fellows corrected to April 19, 1941*

ABBATE, Rocco
ABBOTT, Harlan P.
ADAMS, Frank M.
ADELMAN, Maurice
ADELSON, Samuel
AGNELLI, F. Bruno
ALBERT, Simon
ALEXANDER, George H.
ALLEN, Reginald A.
ALLIN, Francis E.
ANGELONI, Tito
APPLETON, Paul
ARCHAMBAULT, Joseph F.
ARMINGTON, Herbert H.
ASHTON, George W.
ASHWORTH, Charles J.
ASTLE, Christopher J.

BALDRIDGE, Robert R.
BARBER, Joseph D.
BARNES, Albert E.
BARNES, Alvah H.
BARR, Kathleen M.
BARROWS, Albert A.
BATCHELDER, Philip
BATES, Reuben C.
BEARDSLEY, J. Murray
BECK, Irving A.
BECKETT, Francis H.
BELANGER, Joseph F.
BELLIOTTI, Joseph L.
BENJAMIN, Emanuel W.
BERNARDO, John R.
BERNSTEIN, Perry
BERRILLO, Anacleto
BERTINI, Armando A.
BEST, Oliver F.
BIRD, Clarence E.
BISHOP, E. Wade
BLACK, Edward J.
BLANCHARD, Howard E.
BLAZAR, Irving
BLOUNT, Samuel G.
BOLOTOW, Nathan A.
BOLSTER, John A.
BOUCHER, Paul E.
BOURN, Lucy E.
BOWEN, Earl A.
BOWLES, George E.
BOYD, James F.
BRACKETT, Edward S.
BRADLEY, Charles
BRADSHAW, Arthur B.
BRAY, Russell S.
BROADMAN, Harry
BROTHERS, John H.
BROWN, Frederick N.
BUFFUM, William P.
BUGBEE, Raymond G.
BURGESS, Alexander M.
BURKE, Edward F.
BURKE, F. Edward
BURNS. Francis L.
BURNS, Louis E.
BURTON, Kenneth G.
BUTLER, William J.
BUXTON, Bertram H.

CALDER, Harold G.
CALISE, Domenico
CALLAHAN, James C.
CAMERON, Edward S.
CAMPBELL, Edward
CAPWELL, Remington P.
CASE, Jarvis D.
CASTALLO, Salvatore
CERRITO, Louis C.
CHAFEE, Francis H.
CHAPIAN, Mihran A.
CHARON, Ernest A.
CHASE, Peter P.
CHESEBRO, Edmund D.
CHRISTIE, Charles S.
CIARLA, Philomen P.
CICMA, Haralambie G.
CLARK, Samuel D.
CLARKE, B. Earl
CLARKE, Elisha D.
CLARKE, Elliott M.
CLUNE, James P.
COHEN, William B.
COLLOM, Harold L.
CONDÉ, George F.
CONLON, Leo V.
CONRAD, E. Victor
CONSTANTINEAU, Aurelien
CONWAY, John J.
COOK, Irving S.
COOK, Paul C.
COOKE, Charles O.
COONEY, John P.
CORBETT, Francis A.
CORMIER, Evariste A.
CORRIGAN, Francis V.
CORSELLO, Joseph N.
CORVESE, Anthony
COUGHLIN, Frederic A.
COX, James H.
CRANDALL, Harry F.
CRANK, Rawser P.
CUMMINGS, Frank A.
CUMMINGS, William W.
CURREN, L. Addison
CUTTS, Frank B.
CUTTS, Morgan
CUTTS, William B.

DANFORTH, Murray S.
DAVIES, Stanley D.
DAVIS, George W.
DAVIS, William P.
DEERY, James P.
DEVERE, Frederick H.
DE WOLF, Halsey
DI LEONE, Ralph L.
DIMMITT, Frank W.
DONLEY, John E.
DOTEN, Carl R.
DOTTERER, Charles S.
DOUCET, Charles S.
DOWLING, Joseph L.
DOWLING, Richard H.
DREW, Robert W.
DUCKWORTH, Milton
DUFRESNE, Walter J.
DUGAS, Leo
D'UGO, William P.
DUPRE, Guyon G.
DURKIN, Patrick A.
DUSTIN, Cecil C.
DWYER, George J.

ECKSTEIN, Adolph W.
EDDY, Augustine W.
EDDY, Jesse P.
EMIDY, Herman L.
EMIDY, Stephen E.
ERINAKES, Peter C. H.

FAGAN, James H.
FAIN, William
FAMIGLIETTI, Edward V.
FARAGO, Samuel S.
FARRELL, Charles L.
FARRELL, John T.
FARRELL, Robert L.
FEINBERG, Banice
FERGUSON, John B.
FIDANZA, Antonio G.
FISHBEIN, Jay N.
FITTS, Fernald C.
FITZPATRICK, Charles P.
FITZPATRICK, Walter F., Jr.
FLETCHER, William
FLYNN, Joseph C.
FLYNN, Thomas S.
FOLEY, William H.
FONTAINE, Auray
FORGET, Ulysse
FOX, A. Henry
FOX, G. Raymond
FRANKLIN, Joseph
FREEDMAN, David
FULTON, Frank T.

GALLAGHER, Henry J.
GARRISON, Norman S.
GARSIDE, Francis V.
GAUDET, Albert J.
GAUTHIER, Henri E.
GEIGER, Preston D.
GELLER, Philip S.
GERBER, Isaac
GIBSON, J. Merrill
GIFFORD, Nathaniel H.
GILBERT, James A.
GILBERT, John J.
GIURA, Arcadie
GOLDBERGER, Milton
GOLDOWSKY, Seebert J.
GONGAWARE, Hartford P.
GORDON, John H.
GORDON, Walter C.
GORMLY, Charles F.
GREENSTEIN, Jacob E.
GREGORY, Kalei K.
GRENOLDS, Walter J.
GROSSMAN, Herman P
GROVER, Morris L.
GRZEBIEN, Thomas W.

HACKING, Raymond F.
HAGENOW, LeRoy K.
HALBACH, Robert McC.
HALE, Frank S.
HALL, Hugh J.
HAM, John C.
HAMILTON, James
HAMMOND, Roland
HANLEY, Francis E.
HANLEY, Henry J.
HANSON, F. Charles
HAPP, Linley C.
HARDMAN, Margaret S.
HARDY, Arthur E.
HARRIS, Herbert E.
HARVEY, N. Darrell
HASCALL, Theodore C.
HATHAWAY, Clifford S.
HAWKES, Charles E.
HAWKINS, Joseph F.
HAYES, Walter E.
HAYWARD, John A.
HECKER, Harry
HELFRICH, John W.
HENRY, Robert T.
HILL, Prescott T.
HINDLE, William
HODGSON, William H.
HOLLINGWORTH, Arthur
HOLT, Charles H.
HONAN, Frank J.
HOPKINS, Henry W.
HORAN, William A.
HOUGHTON, Montafix W.
HOUSTON, Craig S.
HOYE, Henry J.
HUBBARD, John D.
HUDSON, Royal C.
HUGHES, Stephen F.
HUGHES, William N.
HUNT, Russell R.
HUNT, William W.
HUSSEY, Frederic V.
HYER, Harrison F.

ISRAEL, Cyril

JACKVONY, Albert H.
JACOBSON, Frank J.
JACOBY, Douglas P. A.

JOHNSON, Linwood H.
JOHNSTON, Joseph C.
JONES, Henry A.
JONES, John P.
JONES, Walter S.
JORDAN, Harmon P. B.
JORDAN, William H.
JOYCE, Henry S.

KECHIJIAN, Harry M.
KECHIJIAN, Natalie
KEEFE, Patrick H.
KELLEY, Jacob S.
KELLY, Earl F.
KENNEDY, Thomas F.
KENNEY, John F.
KENNEY, Stephen A.
KENNON, Charles E. V.
KENT, Joseph C.
KENYON, Harold D.
KIENE, Hugh E.
KING, Alfred E.
KINGMAN, Lucius C.
KNAPP, Harry J.
KRAEMER, Richard J.
KRAMER, Louis I.
KROLICKI, Thad A.

LADD, Joseph H.
LALONDE, Alphonse J.
LALOR, Thomas J.
LAMOUREUX, Stanislas A.
LANGDON, John
LASKEY, Howard G.
LAURELLI, Edmond C.
LAWSON, Herman A.
LEECH, Clifton B.
LEET, William L.
LENZNER, Simon G.
LEVY, William S.
LIBBY, Harold
LITTLEFIELD, Frank B.
LORD, Robert M.
LUFT, Raymond
LUONGO, Fedele U.
LUPOLI, Alphonse W.
LUTZ, Frank L.
LYNCH, John P.

MACK, John A.
MacCARDELL, Frank C.
MAC LEOD, Norman M.
MAGILL, William H.
MAHONEY, Andrew W.
MAHONEY, Michael P.
MAHONEY, William A.
MARA, Earl J.
MARGOSSIAN, Arshag D.
MARKS, Herman B.
MARSHALL, Julian B.
MARTIN, Arthur E.
MARTIN, Thomas A.
MARTINEAU, Lawrence A.
MATHEWS, Frank H.
MATHEWS, George S.
MATHEWSON, Earl J.
MATTEO, Frank I.
McCABE, Francis J.
McCAFFREY, Jerome J.
McCANN, James A.
McCARTHY, James M.
McCOART, Richard F.
McCOOEY, James H.
McCURDY, Gordon J.
McCUSKER, Henry F.
McDONALD, Charles A.
McEVOY, Frank E.
McGRAW, George B.
McGUIRK, William R.
McLAUGHLIN, Edward A.
McLAUGHLIN, William H.
MEDOFF, Edward B.
MELVIN, Edward G.
MERCHANT, Marcius H.
MERDINYAN, Ardashes H.
MERRILL, Whitman
MESSINGER, Harry C.
MIGLIACCIO, Anthony V.
MILAN, Michael B.
MILLER, Albert H.
MILLS, Parker
MINER, Harold C.
MISSIRLIAN, Mihran
MONAHAN, John T.
MONTI, Victor H.
MOOR, Henry B.
MOORE, James S.
MORAN, James B.
MOREIN, Samuel
MORI, Laurence A.
MOWRY, Classen
MOWRY, Jesse E.
MUNCY, William M.
MURPHY, John F.
MURPHY, Robert G.
MURPHY, Thomas H. (Pawtucket)
MYERS, Edward L.

NATHANS, Samuel
NESTOR, Michael J.
NICHOLS, Ira C.
NOURIE, Joseph P.
NOYES, Ira H.

O'BRIEN, James P.
O'CONNELL, Francis D.
O'CONNELL, Joseph C.
O'CONNOR, John V.
O'CONNOR, Michael J.
ODDO, Vincent J.
O'NEIL, Michael J.
O'ROURKE, Charles B.
O'ROURKE, Patrick I.

PALMER, William H.
PARDEE, Katherine
PARKINSON, James M.
PARTRIDGE, Herbert G.
PEARSON, Rudolph W.
PEDORELLA, Americo J.
PELLETIER, Emery
PERKINS, Jay
PERRY, Charles F.
PETERS, John M.
PETRUCCI, Ralph J.
PHILLIPS, Charles L.
PICKLES, Wilfred
PITTS, Herman C.
PLATT, Marden G.
PORTER, Emery M.
PORTER, Lewis B.
POTTER, Alfred L.
POTTER, Edgar S.
POTTER, Merle M.
PRIOR, James H.
PUTNAM, Helen C.

QUESNEL, Ernest J.

RAMOS, José M.
RANDALL, Arthur G.
RAYMOND, Charles N.
REGAN, John F.
REGO, Rodrigo P. da C.
REGO, Victor P. da C.
REILLY, Joseph W.
RICE, William O.
RICHARDSON, Dennett L.
RILEY, Clarence J.
RITTNER, Mark
ROBINSON, Robert C.
ROCHELEAU, Walter C.
ROGELL, Harold I.
RONCHESE, Francesco
ROSE, Alanson D.
ROSS, Florence M.
ROSWELL, Joseph T.
ROUNDS, Albert W.
RUEST, Florian A.
RUGGLES, Arthur H.
RUISI, John E.
RUSSELL, Amy H. E.
RYAN, J. Francis
RYAN, Vincent J.

ST. ANGELO, Joseph A.
SAKLAD, Elihu
SAKLAD, Meyer
SAKLAD, Sarah M.
SANBORN, Harvey B.
SARGENT, Francis B.
SAVRAN, Jack
SAWYER, Carl D.
SAYER, Edmund A.
SCANLAN, Thomas F.
SCANLON, Michael H.
SCORPIO, Angelo
SENSEMAN, Laurence A.
SHARP, Benjamin S.
SHARP, Ezra A.
SHATTUCK, George L.
SHAW, Eliot A.
SHERIDAN, James J.
SHIELDS, William P.
SMITH, Clara Loitman
SMITH, Frederick A.
SMITH, Joseph
SMITH, Orland F.
SMITH, R. Morton
SOUTHEY, Charles L.
SPERBER, Perry
SPRAGUE, Stanley
STEPHENS, Henry F.
STEWART, Charles W.
STONE, Ellen A.
STONE, Eric P.
STORRS, Berton W.
STREKER, Edward T.
STREKER, William S.
STURGIS, Karl B.
SULLIVAN, Michael H.
SWEENEY, John W.
SWEET, Charles F.
SYLVIA, Charles A.

TAGGART, Fenwick G.
TANGUAY, Joseph E.
TARTAGLINO, Alfred M.
TATUM, Julianna R.
TEFFT, Benjamin F.
THEWLIS, Malford W.
THOMPSON, Edwin G.
TINGLEY, Louisa P.
TOWLE, Bernard L.
TRAINOR, Edward H.
TREMBLAY, Euclide L.
TRIEDMAN, Harry
TROPPOLI, Daniel V.
TURCO, Salvatore J. P.
TURNER, Charles S.
TURNER, Howard K.
TURNER, J. Lincoln

UTTER, Henry E.

VAN BENSCHOTEN, George W.
VANCE, Michael E.
VISGILIO, Thomas, Jr.

WALSH, John G.
WATERMAN, George W.
WEBBER, Joseph B.
WEBSTER, Frederick A.
WEEDEN, Allen A.
WEIGNER, Walter C.
WELCH, Stephen A.
WELLS, Guy W.
WESTCOTT, Clinton S.
WESTCOTT, Niles
WEYLER, Henry L. C.
WHEATON, James L.
WHITE, George F.
WHITMARSH, Robert H
WILCOX, Roswell S.
WILLIAMS, Harold W.
WILLIAMS, Pearl
WINDSBERG, Eske H.
WING, Elihu S.
WINKLER, Herman A.
WINKLER, Malcolm
WISE, Bernard O.
WITTES, Saul A.
WOODMANSEE, Clarence H.
YOUNG, George L.
YOUNG, John A.

ZAMBARANO, Ubaldo E.